WHAT IS CLAIMED IS:

1. An active electrode, comprising:

an active electrode filament and an active electrode head located at the distal end of the active electrode filament, the active electrode head comprising a coil of wire, the coil comprising from about 0.5 to 1.5 turns of the wire, the distal end of the wire defining a dividing portion, and the dividing portion located within the coil.

2. The active electrode of claim 1, wherein the dividing portion bisects the coil to form a first void and a second void within the coil.

3. The active electrode of claim 2, wherein the first void and the second void are adapted for retaining a liquid therein.

4. The active electrode of claim 1, wherein the dividing portion is arranged at an angle of about 45° to the longitudinal axis of the active electrode filament.

5. The active electrode of claim 1, wherein the wire comprises a material selected from the group consisting of molybdenum, platinum, tungsten, palladium, iridium, titanium, and their alloys.

6. The active electrode of claim 1, wherein the wire has a diameter in the range of from about 0.006 inch to 0.020 inch.

7. A return electrode, comprising:

a return electrode filament and a return electrode head located at the distal end of the return electrode filament, the return electrode head comprising a coil of wire, the coil comprising from about 3 to 10 turns.

8. The return electrode of claim 7, wherein the distal end of the wire terminates within the return electrode coil at the return electrode coil proximal end.

9. The return electrode of claim 7, wherein the return electrode filament is adapted for direct insertion in a connection block of an electrosurgical probe.

10. The return electrode of claim 7, wherein the wire comprises a material selected from the group consisting of molybdenum, platinum, tungsten, palladium, iridium, titanium, and their alloys.

11. The return electrode of claim 7, wherein the wire has a diameter in the range of from about 0.008 inch to 0.030 inch.

12. A method of treating a target tissue of a patient, comprising:

a) providing an electrosurgical probe having an active electrode and a return electrode, the return electrode comprising a return electrode coil, the return electrode coil having from about 3 to 10 turns, the active electrode adapted for ablating tissue via molecular dissociation of components of the tissue and for coagulating tissue;

b) positioning the active electrode in at least close proximity to the target tissue; and

c) applying a high frequency voltage between the active electrode and the return electrode, wherein at least a portion of the tissue at the target site is ablated or modified.

13. The method of claim 12, wherein the active electrode comprises a flattened active electrode coil.

14. The method of claim 13, further comprising:

d) during said step c) translating the active electrode coil in the plane of the active electrode coil with respect to the target tissue, wherein the target tissue is severed.

15. The method of claim 13, further comprising:

e) during said step c), translating the active electrode coil in a direction orthogonal to the plane of the active electrode coil, wherein the target tissue is volumetrically removed.

16. The method of claim 13, further comprising:

f) during said step c), engaging at least one side of the active electrode coil against the target tissue, wherein the target tissue is coagulated.

17. The method of claim 12, wherein the active electrode comprises a hook, a coil, or a disc.

18. The method of claim 12, further comprising:

g) prior to said step c), delivering an electrically conductive fluid to the return electrode coil.

19. The method of claim 18, wherein the probe includes a shaft having a shaft distal end, the electrically conductive fluid delivered axially from the shaft distal end via a fluid delivery port.

20. The method of claim 19, wherein the electrically conductive fluid is delivered against interior and exterior surfaces of the return electrode coil.

21. The method of claim 12, further comprising:

h) aspirating unwanted materials from the surgical site via an aspiration lumen.

22. The method of claim 12, wherein the high frequency voltage applied in said step c) is in the range of from about 10 volts RMS to 500 volts RMS.

23. The method of claim 12, wherein during said step c) the target tissue is exposed to a temperature in the range of from about 40° C to 90° C.

24. The method of claim 12, wherein the probe includes a shaft, the shaft comprising a multi-lumen tube having a plurality of lumens therein.

25. The method of claim 24, wherein the plurality of lumens include a first lumen and a second lumen, and the return electrode and the active electrode are arranged in the first lumen and the second lumen, respectively.

26. The method of claim 24, wherein the multi-lumen tube comprises a polyurethane elastomer extrusion.

27. A method of modifying a tissue at a target site of a patient, comprising:

a) providing an electrosurgical probe including a return electrode and an active electrode, the active electrode comprising a substantially flat active electrode head adapted for severing tissue via molecular dissociation of components of the tissue, the active electrode head including a dividing portion, the active electrode head having at least one void therein;

b) positioning the active electrode head in at least close proximity to the tissue at the target site; and

c) applying a high frequency voltage between the active electrode and the return electrode, the high frequency voltage sufficient to ablate or modify at least a portion of the tissue at the target site.

28. The method of claim 27, wherein the active electrode head comprises an active electrode coil having from about 0.5 to 1.5 turns.

29. The method of claim 28, wherein the active electrode coil has a diameter in the range of from about 0.050 inch to 0.200 inch, and a width in the range of from about 0.003 inch to about 0.012 inch.

30. The method of claim 27, wherein the return electrode comprises a return electrode coil having from about 3 to about 10 turns.

31. The method of claim 27, wherein said step c) effects localized molecular dissociation of tissue components at the target site.

32. The method of claim 27, further comprising:

d) during said step c), reciprocating the active electrode head in the plane of the active electrode head with respect to the tissue, wherein the tissue is severed by localized molecular dissociation of tissue components.

33. The method of claim 27, further comprising:

e) during said step c), engaging at least one side of the active electrode head against a severed tissue, whereby the severed tissue is coagulated.

34. An electrosurgical probe, comprising:

a shaft having a shaft proximal end portion and a shaft distal end portion; and

an electrode assembly disposed on the shaft distal end portion, the electrode assembly comprising a return electrode and an active electrode, wherein the return electrode comprises a distal return electrode head having an open structure whereby the return electrode head allows the passage of an electrically conductive fluid therethrough.

35. The probe of claim 34, wherein the return electrode head has an internal void therethrough, and wherein the active electrode passes within the internal void.

36. The probe of claim 34, wherein the return electrode head is adapted for retaining an electrically conductive fluid thereon.

37. The probe of claim 36, wherein the electrically conductive fluid is retained on a surface of the return electrode head via surface tension.

38. The probe of claim 34, wherein the return electrode head comprises a coil of wire.

39. The probe of claim 34, wherein the return electrode head comprises a return electrode coil having up to about 50 turns.

40. The probe of claim 34, wherein the active electrode comprises a distal active electrode head having at least one void therein.

41. The probe of claim 40, wherein the active electrode head is adapted for retaining an electrically conductive fluid within the at least one void.

42. The probe of claim 34, wherein the active electrode head comprises a metal disc or a flattened coil.

43. The probe of claim 34, wherein the active electrode head comprises an active electrode coil having from about 0.5 to 1.5 turns.

44. An electrosurgical probe, comprising:

a shaft having a shaft proximal end portion and a shaft distal end portion; and

an electrode assembly at the shaft distal end portion, the electrode assembly comprising an active electrode and a return electrode, wherein the return electrode comprises a return electrode filament and a return electrode head located at the distal end of the return electrode filament, the return electrode filament coupled directly to the connection block, wherein the return electrode conducts electric current from the return electrode head to the connection block as a single component.

45. A return electrode for an electrosurgical probe, comprising:

a return electrode filament and a return electrode head disposed at the distal end of the return electrode filament, the return electrode head having an internal void therein, and the return electrode head allowing the passage of a fluid therethrough.

46. The return electrode of claim 45, wherein the return electrode head comprises a return electrode coil having from about 1 to 50 turns.

47. The return electrode of claim 45, wherein the return electrode head is adapted for retaining an electrically conductive fluid thereon.

48. The return electrode of claim 47, wherein the electrically conductive fluid is retained on a surface of the return electrode head via surface tension.

49. The return electrode of claim 45, wherein the return electrode filament is adapted for coupling directly to a connection block.

50. An electrosurgical probe, comprising:

a shaft having a shaft proximal end portion and a shaft distal end portion; and

an electrode assembly at the shaft distal end portion, the electrode assembly comprising an active electrode and a return electrode, the return electrode including a return electrode filament and a return electrode head, wherein the return electrode head is formed by winding a distal end of the return electrode filament into a coil.

Patent Application